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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/865,734	05/29/2001	Yasuhiro Omura	04788.0247	5967

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EXAMINER

NGUYEN, HUNG

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/865,734

Applicant(s)

OMURA, YASUHIRO

Examiner

Hung Henry V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 4-6, 15, 16 and 22-29 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3, 17, 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7-14, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 4. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group I in Paper No. 6 is acknowledged. However, it has come to the Examiner's attention that due to a typographical error, the claims of group I in the Restriction Requirement dated 8/29/2002 was in error. The correct claims of group I should be claims 1-3, 7-14, 17-21, and the correct claims of group II should be 4-6, 15-16 and 22-29. Accordingly, claims 4-6, 15-16 and 22-29 are withdrawn from consideration. The Examiner regrets and apologizes for any inconvenience caused to the applicant due to this discrepancy.

Abstract

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the following term should be omitted: "comprise" in line 4. Correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7, 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 7, 10, and 11, the following terms lacks proper antecedent basis:
“the diffraction patterns” in claim 7, line 1.
“said diffractive optical element” in claim 10, line 3, since there are first and second diffractive optical elements, it is not clearly understood what “said diffractive optical element”, the applicant refers to. Reference to “element” should change to -- elements--.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 7-9, 11-14, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al (U.S.Pat. 6,349,005) in view of Kitagawa (U.S.Pat. 5,748,372).

With regard to claims 1-2, 7-9, 11-14, 18-19, Schuster et al (fig.7) discloses a projection optical system for forming a predetermined pattern formed on a first plane (7) onto a second plane (9) comprising substantially all basic features of the instant claims such as a first diffractive optical element (9) positioned in the optical path between the first plane and second plane; a second diffractive optical element (8) positioned in the optical path on the side of the second plane from

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the first diffractive optical element and an optical system (2) arranged between the first optical element and the second optical element. Schuster does not expressly disclose that the optical system (2) has a negative power. Using a proper combination of a first diffractive optical element, an optical system and a second diffractive element so that aberrations produced by the diffractive optical systems can be corrected is within level of one having ordinary skill in the art (see col.6, lines 50-60). For example, Kitagawa teaches an objective system (see figs. 5-7) using first and second diffraction type optical elements (DOE₁ and DOE₂) where an optical system placed between the first and second optical system comprising at least one lens having negative power (see col.9, lines 44-58). Kitagawa further teaches a front optical system positioned between the first plane and the first diffractive optical element; a rear optical system arranged between the second diffractive optical element and the second plane (see figs 5-7) where the first and second diffractive optical elements have a diffraction surface of sawtooth shape in section wherein each sawtooth is/or is not stepped (see fig.3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Schuster and Kitagawa to obtain the invention as specified in claims 1-2, 7-9, 11-14, 18-19. It would have been obvious to one having ordinary skill in the art to employ an optical element with a negative power placed between the first and second diffractive optical elements as suggested by Kitagawa into the projection optical system of Schuster for at least the purpose of correcting the aberrations and thus improving the quality of the images to be printed.

Allowable Subject Matter

7. Claim 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, either alone or in combination, neither discloses nor makes obvious a projection optical system where a filter having a different transmittance according to each ring area is arranged in the vicinity of the diffractive optical elements.

8. Claims 3, 17, 20-21 are allowed. The following is an examiner's statement of reasons for allowance: while the prior art of record teaches projection optical system for projecting a pattern formed on a first plane onto a second plane where a diffractive optical system and an optical system arranged in the optical path between the first plane and the second plane but does not specially teach the projection optical system satisfying conditions as recited in the instant claims.

Prior Art Made of Record

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Ogawa (U.S.Pat. 6,313,958) discloses projection exposure system having first and second diffractive optical elements.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.


Hung Henry V Nguyen
Examiner
Art Unit 2851

hvn
November 29, 2002